

-50-

WHAT IS CLAIMED IS:

1. A method for coding a hardware description of a peripheral device for multiple instantiations within a single chip, the method comprising:

configuring a function block to instantiate the hardware description with options associated with different configurations of the peripheral device; and

selecting between the options at compile time for each instantiation of the peripheral device;

wherein the options are selected without modification to the hardware description.

2. The method of claim 1 wherein the step of selecting comprises:

passing a parameter value to the function block at compile time for each instantiation of the hardware peripheral; and

instantiating the peripheral device using code according to the parameter value.

3. The method of claim 1 wherein the configuration options are peripheral design functions, peripheral design pin widths, or peripheral design interface pin outs.

-51-

4. The method of claim 1 and further comprising:

tying strap pins to power or ground.

5. The method of claim 1 wherein the step of configuring comprises:

configuring the function block with local runtime constants adapted to be overridden individually at compile time.

6. The method of claim 5 wherein the step of selecting comprises

overriding selected runtime constants at compile time to select between the variable options for each instance of the peripheral device.

7. A method for coding a reusable hardware description of a peripheral device for multiple instantiations within an integrated circuit, the method comprising:

configuring a function block to instantiate the reusable hardware description with options at compile time; and

instantiating multiple instances of the peripheral device on the integrated circuit by programmatically selecting

-52-

between the options at compile time for each instantiation of the peripheral device.

8. The method of claim 7 wherein the variable options are selected without modification to the reusable hardware description.

9. The method of claim 7 wherein the step of configuring comprises:

adding one or more peripheral devices based on desired features of the reusable hardware to the integrated circuit at compile time.

10. The method of claim 7 wherein the step of configuring comprises:

instantiating peripheral devices onto the integrated circuit according to the reusable hardware description wherein each instantiation is unique based on a design parameter.

11. The method of claim 10 wherein the design parameter comprises a signal width of the peripheral device.

12. The method of claim 7 and further comprising:

-53-

defining further the function block by tying
strap pins to ground or to power.

13. The method of claim 7 wherein the step of
configuring further comprises:

configuring the function block with
parameters local in scope, the
parameters adapted to be overridden
individually at compile time.

14. The method of claim 13 wherein the step of
selecting comprises

overriding selected runtime constants at
compile time to select between the
options for each instance of the
peripheral device.

15. The method of claim 7 wherein the step of
configuring comprises:

passing a parameter value to the function
block at compile time for each
instantiation of the peripheral device;
and

instantiating the peripheral device using
the reusable hardware description
according to the parameter value.

16. A method for instantiating multiple
instances of a peripheral device within an integrated

-54-

circuit design based on a reusable hardware description block, the method comprising:

configuring a hardware description block to describe a peripheral device and to describe options associated with different configurations of the peripheral device; and

selecting between the options at compile time for each instantiation of the peripheral device without modifying the hardware description block.

17. The method of claim 16 wherein the step of selecting comprises:

passing a parameter value to the function block at compile time for each instantiation of the hardware peripheral; and

instantiating the peripheral device with options determined by the parameter value.

18. The method of claim 16 wherein the step of configuring comprises:

coding the hardware description block with local runtime constants adapted to be overridden individually at compile time.

-55-

19. The method of claim 16 wherein the variable options comprise local runtime constants and wherein the step of selecting comprises:

selecting one or more of the local runtime constants at compile time; and
overriding the selected one or more of the local runtime constants to differentiate each instance of the peripheral device as needed.

20. The method of claim 16 wherein the options comprise peripheral device functions, peripheral device pin widths or peripheral device signal widths.